Amendments to the claims:

1-5. (cancelled)

5. (previously presented) A semiconductor photodetector device comprising:

a substrate of a first doping type;

an updoped region, laterally disposed above the substrate;

a waveguide laterally disposed above the updoped region for passing light therethrough;

a grating with a tunable effective index positioned between the substrate and the updoped region for reflecting one or more wavelengths of said light;

an upper region, of a second doping type, laterally disposed above the waveguide region;

an absorption section positioned above said upper region for absorbing said reflected wavelengths and generating a photocurrent from said absorbed wavelengths;

a tuning section for changing said effective index of said grating so that only a particular wavelength is selected to be reflected and therefore absorbed by said absorption section.

6. (original) The device of claim 5, where, above the upper region is laterally disposed an absorption region comprising:

an absorption layer;

an updoped region of a different atomic composition than the absorption layer laterally disposed above the absorption region; and

a metallic diffusion layer laterally disposed above the updoped region;

where the absorption region is centered on, and of a width approximately 20-25% that of, the

device of claim 5.

7. (original)The device of claim 5, where the substrate, updoped region, and upper region are made of InP.

8. (original)The device of claim 7, where, above the upper region is laterally disposed an absorption region comprising:

an absorption layer;

an undoped region of a different atomic composition than the absorption layer laterally disposed above the absorption region; and

a metallic diffusion layer laterally disposed above the undoped region;

where the absorption region is centered on, and of a width approximately 20-25% that of, the device of claim 7.

9. (original)The device of claim 5, where the waveguide is composed of InGaAsP.

10. (original)The device of claim 9, where, above the upper region is laterally disposed an absorption region comprising:

an absorption layer;

an updoped region of a different atomic composition than the absorption layer laterally disposed above the absorption region; and

a metallic diffusion layer laterally disposed above the updoped region;

where the absorption region is centered on, and of a width approximately 20-25% that of, the

device of claim 9.

11. (original)The device of claim 7, where the waveguide is composed of InGaAsP.

12. (original)The device of claim 11, where, above the upper region is laterally disposed an absorption region comprising:

an absorption layer;

an undoped region of a different atomic composition than the absorption layer laterally disposed above the absorption region; and

a metallic diffusion layer laterally disposed above the undoped region;

where the absorption region is centered on, and of a width approximately 20-25% that of, the device of claim 11.

13. (original)The device of any of claim 6, 8, 10 or 12, where within the absorption region the absorption layer is made of InGaAs, and the undoped layer of InP.

14-28(cancelled).
~~14-18.~~ (cancelled)

29. (previously presented) The device of any of claims 5-12, further comprising:

a metallic diffusion region in a portion of said upper region; and

a tuning contact in electric communication with said metallic diffusion.

30-32. (cancelled)

33. (previously presented) The semiconductor photodetector of claim 5 wherein said tuning section comprises an electrode, and said effective index is changed by changing an electrical current injected into said electrode.

34. (cancelled)

35. (previously presented) The semiconductor photodetector of claim 5 wherein said absorption section comprises an electrode for generating said photocurrent from said absorbed wavelengths.